

noaa restoration



Advancing *Restoration Science*

NOAA, in partnership with the scientific community, is improving the performance and cost-effectiveness of habitat restoration by...

- ☞ *Conducting and funding research on ecosystem structure and function;*
- ☞ *Studying the recovery process of injured and restored habitats;*
- ☞ *Developing and refining restoration methods and monitoring protocols; and*
- ☞ *Transferring technology to other restoration practitioners.*



<http://restoration.noaa.gov>

ECOLOGICAL RESEARCH IS ESSENTIAL TO ADVANCING THE SCIENCE OF RESTORATION. BY STUDYING RESOURCES AND ECOSYSTEM DYNAMICS IN BOTH INTACT AND DISTURBED ENVIRONMENTS, NOAA GAINS A BETTER UNDERSTANDING OF HEALTHY HABITAT STRUCTURE AND FUNCTION. THIS INFORMATION IS INVALUABLE TO THE RESTORATION COMMUNITY, WHICH RELIES ON RESEARCH DATA TO SET GOALS FOR RESTORATION PROJECTS AND EVALUATE THEIR EFFICACY. IN ADDITION, MONITORING THE RECOVERY PROCESS AT EXISTING RESTORATION SITES ALLOWS NOAA TO IDENTIFY FACTORS CRUCIAL TO SUCCESSFUL RESTORATION, ENABLING PROJECT MANAGERS TO ADJUST METHODS AND APPLY LESSONS LEARNED TO FUTURE SITES. NOAA PARTNERS WITH BOTH ACADEMIA AND THE CONSERVATION COMMUNITY TO APPLY THESE LESSONS WHEN DEVELOPING MONITORING METHODS AND RESTORATION TECHNOLOGIES. A BETTER UNDERSTANDING OF THE REASONS FOR PROJECT SUCCESS OR FAILURE ENSURES THAT RESTORED AREAS FUNCTION AS INTEGRATED PARTS OF THE ECOSYSTEM OVER THE LONG TERM.

CASE STUDY

Wild Birds Help Seagrass Restoration

In the Florida Keys, NOAA is restoring seagrass meadows with the help of wild birds. Bird stakes—vertical PVC pipes topped by wooden blocks—are placed over injured areas. The stakes attract cormorants and other seabirds, whose droppings fertilize the area below and speed the growth of natural and planted seagrass. Shoal grass is typically the first colonizer of barren areas, preparing the way for other species, such as turtle grass and manatee grass, to grow once again.

NOAA scientists, building on years of seagrass research, developed this innovative but simple restoration approach. Researchers learned that seagrass recovery in the Florida Keys is often limited by a lack of nutrients. The use of bird stakes ensures that an ongoing supply of fertilizer is provided directly to the injured areas,

providing a faster, efficient restoration alternative to an otherwise slow, uncertain recovery.

The Florida Keys National Marine Sanctuary protects 2,900 square nautical miles, including seagrass meadows that provide both nursery and feeding grounds for fish and other marine life. Seagrass also filters and stabilizes sediments, helping create the clear waters for which the Florida Keys are known. On average, more than 600 vessel groundings are reported in the sanctuary each year, many of which injure seagrass habitat. The use of bird stakes and associated monitoring efforts will help injured seagrass meadows to thrive once again.



CASE STUDY

Salt Marsh Restoration Techniques in Chesapeake Bay

In 1998, NOAA and several partners began restoring habitat in the Eastern Neck National Wildlife Refuge at the mouth of the Chester River in the Chesapeake Bay. Eastern Neck National Wildlife Refuge is a Chesapeake Bay treasure, teeming with biodiversity valuable to the ecology and economy of the region. However, the refuge is eroding at a rapid rate. To reverse this trend, NOAA and partners created a four-acre marsh using material dredged at the Kent Narrows navigation channel. This project helped solve two problems—erosion of a critical habitat and disposal of dredge material.

By spring 2002, NOAA scientists had developed an experimental design to test various planting techniques to stabilize the new wetland. Volunteers, NOAA scientists, and Baltimore Aquarium staff planted the native marsh plant *Spartina alterniflora* in a series of experimental plots, with controlled variations in density, intertidal elevation, and planting methods. Volunteers and Aquarium staff received training to monitor the success of the plantings, and learned how to collect data on fish and wildlife use. The results of the study will provide important information on which planting patterns and techniques are most effective in erosion-prone areas, and will help measure the value of the restored area for local organisms.

NOAA's partners on this project include the U.S. Fish and Wildlife Service, National Aquarium in

Baltimore, U.S. Army Corps of Engineers, National Fish and Wildlife Foundation, Friends of Eastern Neck, Chesapeake Bay Trust, Shared Earth Foundation, and Curtis and Edith Munson Foundation.